

# Technical specification sheet

2010

## SG<sup>PLUS</sup> 2500H

(12V250AH/C<sub>20</sub>)

### Power Active Carbon Gel Battery



\*\*\* The color and the printed specifications of the products are subject to change without prior notice.



NEWMAX Solar gel batteries are true maintenance-free sealed batteries engineered specially to satisfy the need for frequent deep cycles from PVs and renewable energy storage applications. We are confident that our technology-intensive, long-lasting, and environment friendly SG batteries will provide stability and efficiency for your everyday renewable energy needs.

#### 01 Longer Life 02 Maintenance Free 03 Leak Free 04 Safety

High density, anti-corrosion lead calcium alloy is used in harmony with the GEL electrolyte to reduce the sulfation effect significantly.

NEWMAX battery has a gas recombining design that doesn't need maintenance until the end of its life.

Gel Technology is applied to prevent leakage. They won't spill even if the battery is tipped upside down.

Specially designed anti-explosion filter and safety valves prevent gas leakage when overcharged.

#### General Feature

|   |   |
|---|---|
| ◆ Plate   | Paste type  |
| ◆ Battery type  | Sealed and Maintenance free / Non-spillable construction design   |
| ◆ Case/cover mat  | High-stiffness engineering PP plastic (Heat Deflection Temp. 140°C)<br>RoHS Compliant EU Directive 2002/95/EC |
| ◆ Safety performance  | Safety valve & flame arrestor installation for explosion proof.   |
| ◆ High quality, high reliability and low self discharge rate                                      |   |
| ◆ Exceptional deep discharge recovery performance   |   |
| ◆ Flexibility design for multiple install positions (Position Free, GEL Technology)               |   |
| ◆ Designed in accordance with and published in compliance with applicable IEC and BS EN, KS stds. |   |

- IEC 60896-21/22 Stationary lead-acid batteries - Valve regulated types
- BS EN 61427 Secondary cells and batteries for photovoltaic energy systems (PVES)
- KS C 8518 Stationary sealed lead-acid batteries - Valve regulated types

#### Technical Feature



##### Fahrenheit-Schutz™ Heat Protection Case

Specially Formulated heat and flame resistant PP case material is used to effectively block ambient heat thus preventing heat related malfunctions such as thermal runaway. This proprietary high rigidity case material has heat deflection rating of 140°C.



##### MaxPress™ Grid Technology

Patent pending grid compressing technology which increase the density of the lead grain of the grids. The grain density is typically 400% greater than that of the conventional casting method. This up-to-date grid technology enables our batteries to survive even the toughest deep discharge and PSoC applications.



##### ThixoPure™ GEL Technology

Application of refined pure thixotropic colloidal silica GEL technology to battery electrolyte has greatly increased the cycle life by both preventing plate stratification and providing extra temperature protection against heat and cold. We are the first Korean company to successfully commercialize the GEL technology in the VRLA battery industry.



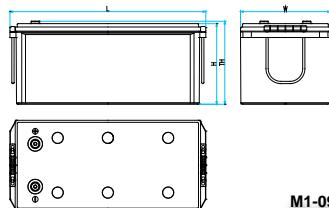
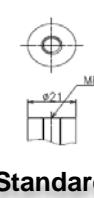
##### FlexSealing™ Anti Explosion Filter

Patent pending proprietary cap filtering and sealing technology. Battery cell caps are sealed simultaneously using specially designed O-ring and explosion filters to prevent leakage and gassing more effectively than ever before.



##### Active Carbon™

In every NEWMAX battery, proprietary active carbon additive is used in the active material for both positive and negative plates to enhance charge acceptance and cycle endurance. Active Carbon™ works to strengthen charge pathways to improve performance consistency and enhance performance at partial state of charge(PSoC) environment.



M1-09

#### Operating temperature range

| Discharge  | Charge   | Storage    |
|------------|----------|------------|
| -20°C~60°C | 0°C~50°C | -20°C~60°C |

#### Battery model

#### SG 2500H (12V250AH / 20 HOUR RATE)

|  |  |                                     |                               |                          |
|--|--|-------------------------------------|-------------------------------|--------------------------|
| Capacity (@25°C)                               | C <sub>20</sub> (1.80VPC)                | C <sub>10</sub> (1.80VPC)           | C <sub>5</sub> (1.70VPC)      | C <sub>1</sub> (1.60VPC) |
|  | 250Ah                                    | 230Ah                               | 210Ah                         | 152Ah                    |
| Dimensions (mm/inch)                           | Length                                   | Width                               | Height                        | Total Height             |
|  | 524(20.63)                               | 241(9.49)                           | 215(8.46)                     | 221(8.70)                |
| Weight (kg/lbs)                                | 61.5kg (135.6lbs) ±3%                    |                                     |                               |                          |
| Internal resistance (mΩ)                       | 2.10 mΩ ±10% (@25°C, 77°F), full charged |                                     |                               |                          |
| Max. discharge current (5sec)                  | 1770 A                                   | Max. discharge current(continuous)  |                               | 660 A                    |
| Capacity affected by Temperature               | @30°C (86°F)                             | @25°C (77°F)                        | @10°C (50°F)                  | @-10°C (14°F)            |
|  | 105%                                     | 103%                                | 95%                           | 78%                      |
| Self discharge (@25°C, 77F)                    | After 1 month ≤2%                        | After 3 month ≤6%                   | After 6 month ≤12%            |                          |
| Max. short duration discharge current (0.1sec) | 4800A ±10%                               |                                     |                               |                          |
| Recommended charging (@25°C)<br>Solar system   | 1 <sup>st</sup> Bulk step                | 2 <sup>nd</sup> Absorption step     | 3 <sup>rd</sup> Floating step |                          |
|  | 0.20~0.25C CC                            | 2.40V/cell CV, (cut-off A : 0.005C) | 2.28V/cell CV                 |                          |

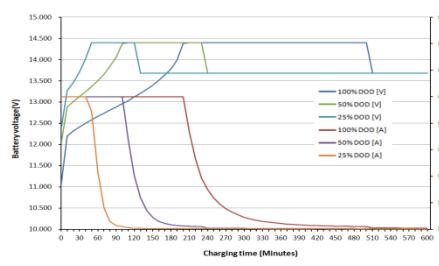
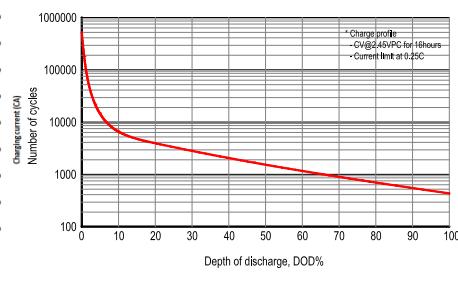
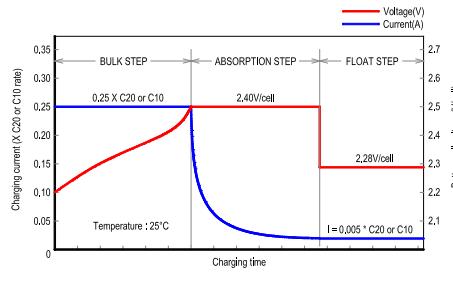
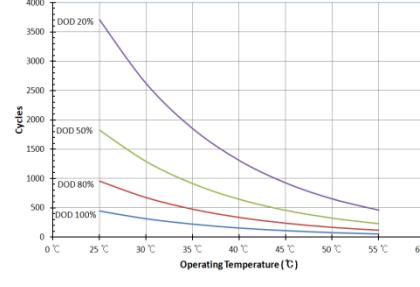
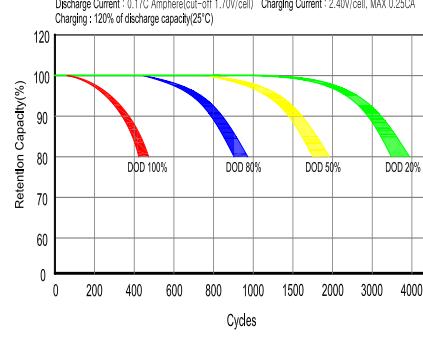
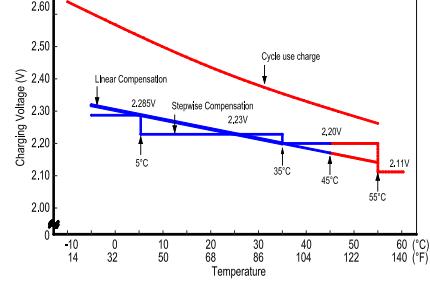
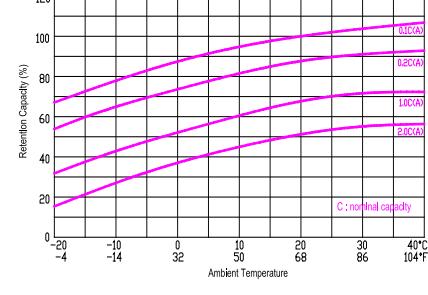
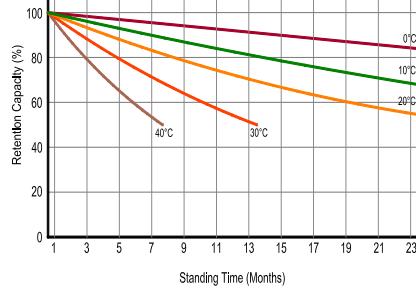
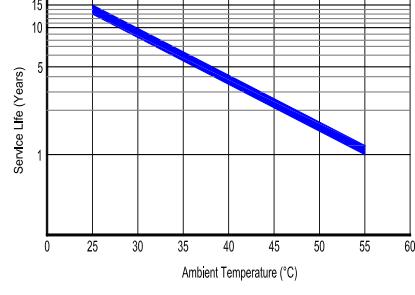


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**DOD % vs charging time curve (@25°C)****Cycle life vs detail DOD% (@25°C)****Solar charging characteristics (@25°C)****Relationship between cycle life & temp.****Cycle life characteristics (@25°C)****Relationship between charging voltage & temp.****Effect of temperature on capacity****Self discharge****Relationship between Floating life & temp.****Constant current discharge ratings – Amperes per cell @ 25°C**

| V/cell | Minutes |     |     |     |     |     | Hours |      |      |      |      |      |
|--------|---------|-----|-----|-----|-----|-----|-------|------|------|------|------|------|
|        | 5       | 10  | 15  | 20  | 30  | 40  | 1     | 3    | 5    | 8    | 10   | 20   |
| 1.85V  | 207     | 202 | 199 | 192 | 164 | 148 | 117   | 54.6 | 36.0 | 24.1 | 21.2 | 11.5 |
| 1.80V  | 302     | 289 | 257 | 231 | 194 | 168 | 131   | 59.1 | 39.3 | 25.7 | 23.1 | 12.5 |
| 1.75V  | 350     | 324 | 282 | 249 | 201 | 179 | 138   | 59.7 | 40.3 | 26.3 | 23.1 | 12.5 |
| 1.70V  | 397     | 353 | 302 | 265 | 210 | 185 | 142   | 61.7 | 42.1 | 26.9 | 23.2 | 12.5 |
| 1.65V  | 443     | 384 | 324 | 280 | 222 | 190 | 147   | 63.9 | 42.4 | 27.4 | 23.3 | 12.6 |
| 1.60V  | 496     | 421 | 349 | 299 | 234 | 199 | 152   | 65.9 | 44.0 | 27.9 | 23.5 | 12.7 |

**Constant power discharge ratings – Watts per cell @ 25°C**

| V/cell | Minutes |     |     |     |     |     | Hours |     |      |      |      |      |
|--------|---------|-----|-----|-----|-----|-----|-------|-----|------|------|------|------|
|        | 5       | 10  | 15  | 20  | 30  | 40  | 1     | 3   | 5    | 8    | 10   | 20   |
| 1.85V  | 383     | 374 | 368 | 355 | 308 | 279 | 222   | 105 | 69.6 | 46.8 | 41.3 | 22.4 |
| 1.80V  | 543     | 520 | 462 | 420 | 356 | 313 | 247   | 112 | 75.2 | 49.7 | 44.9 | 24.3 |
| 1.75V  | 613     | 576 | 504 | 450 | 368 | 331 | 257   | 114 | 77.1 | 50.5 | 44.9 | 24.3 |
| 1.70V  | 675     | 603 | 540 | 474 | 381 | 338 | 265   | 117 | 80.3 | 52.1 | 45.0 | 24.3 |
| 1.65V  | 741     | 662 | 568 | 498 | 398 | 345 | 276   | 121 | 81.2 | 53.3 | 45.2 | 24.4 |
| 1.60V  | 810     | 705 | 602 | 524 | 420 | 361 | 279   | 124 | 83.2 | 53.4 | 45.8 | 24.8 |